

1 Cover Page

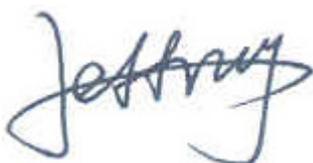
FCC Test Report (DoC)

Application No.: HKEM1611001544IT
Applicant: Zhejiang Dahua Vision Technology Co., Ltd.
Product Information:
 Product Name: Indoor Monitor
 Model: DHI-VTH1550CH, DH-VTH1550CH, VTH1550CH, DH-VTH1510CH, DHI-VTH1510CH, VTH1510CH, OEM-VTH1510C
 (Refer to Section 4.10 for more details)
 Serial No.: --
Requirement: CFR 47 PART 15 SUBPART B, 2015
Date of Receipt: August 24, 2015
Date of Test: August 28, 2015 to September 01, 2015
Date of Issue: November 14, 2016

Test Result:	PASS*
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* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature:



CHEN Jian-feng, Jeffrey



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS IECC Ltd. or testing done by SGS IECC Ltd. in connection with, distribution or use of the product described in this report must be approved by SGS IECC Ltd. in writing.

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2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150KHz to 30MHz)	CFR 47 PART 15 SUBPART B, 2015	ANSI C63.4: 2014	Class B	PASS
Radiated Emission (30MHz to 1GHz)	CFR 47 PART 15 SUBPART B, 2015	ANSI C63.4: 2014	Class B	PASS
Radiated Emission above 1 GHz	CFR 47 PART 15 SUBPART B, 2015	ANSI C63.4: 2014	Class B	N/A ¹⁾
Remark:				
1) Please refer to section 6.3 of this report for explanation				

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4 General Information

4.1 Client Information

Applicant: Zhejiang Dahua Vision Technology Co., Ltd.
Address of Applicant: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

4.2 General Description of EUT

EUT Name: Indoor Monitor
Model: DHI-VTH1550CH, DH-VTH1550CH, VTH1550CH, DH-VTH1510CH, DHI-VTH1510CH, VTH1510CH, OEM-VTH1510C
Serial No.: --
EUT Description: This product can be connect to servicer by LAN port , and can monitor image from camera.

4.3 Details of EUT

Power Supply: For EUT: DC 12V
For Adaptor:
Model: ADS-12B-12
Input: AC 100V-240V
Output: DC 12V, 1A
Power Cord: --
DC Cable: 150cm
Operating frequency: 100MHz (the Highest working frequency)

4.4 Description of Support Units

Supporting equipments :

Description	Manufacturer	Model No.	Serial No.	Data Cable	Power Cable
Personal Computer	DELL	OPTIPLEX 755	E191 (reference no.)	N/A	1.5m
Monitor	DELL	SP2208WFPt	DT09068168FB	VGA	1.5m
Printer	Hewett Packard	C3990A	JPZT098822	LPT	1.5m
Universal Programmer	Qian LongSheng	QL-2006	201105116086	COM/USB ¹⁾	1.5m (DC)
Keyboard	Lenovo	KB1021	0000319	USB ²⁾	N/A
Mouse	Lenovo	MO28UOL	4401282 081	USB ³⁾	N/A-

Note: For the cable detail please refer to below table.

Cables:

#	Type	Length, m	Shield	Metallic hood	Ferrite
1	VGA	1.8	Yes	No	Yes
2	LPT	1.8	Yes	No	No
3	COM	1.5	Yes	No	No
4	USB ¹⁾	1.5	Yes	No	No
5	USB ²⁾	1.8	Yes	No	No
6	USB ³⁾	1.8	Yes	No	No

Software:

Description	Manufacturer	Software name	Version no.
LAN test software	Microsoft	Cmd	6.1.7601

4.5 Standards Applicable for Testing

CFR 47 PART 15 SUBPART B, 2015
ANSI C63.4: 2014

4.6 Test Location

All tests were performed at: -

SGS IECC Ltd. (wholly owned by SGS Group)

Units 303-305, 3/F., 31 Lok Yip Road, On Lok Tsuen, Fanling, N.T., Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480.

No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – CAB Registration No.: 446297**

Measurement facility located at Fanling (Hong Kong), accredited as a Conformity Assessment Body (CAB) and was designated by FCC to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Part 15 and 18 of the Commission's Rules.

4.8 Deviation from Standards

None.

4.9 Abnormalities from Standard Conditions

None.

4.10 Declaration of Family Grouping

Model No.: DHI-VTH1550CH, DH-VTH1550CH, VTH1550CH

Only the Model No. DHI-VTH1550CH was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models. Only different on model number, trade name and appearance deviation.

The model: DHI-VTH1550CH is identical to model: H-VTH1510CH, DHI-VTH1510CH, VTH1510CH, OEM-VTH1510C stated in the report HKEM150900119301 dated on September 18, 2015.

The difference is only on the model number for marketing strategy.

4.11 Abbreviations

N/A: Not Applicable

EUT: Equipment Under Test

5 Equipments Used during Test

Conducted Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
Test Receiver	Rohde & Schwarz	ESCS 30 /100388	2014-10-17	2015-10-16
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2 / 375881052	2015-02-02	2017-02-01
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127 / 8127312	2014-10-17	2015-10-16

Radiated Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
3m Semi-Anechoic Chamber (pre-test)	--	--	--	--
3m / 10m Open Area Test Site	--	--	2015-03-11	2018-03-10
Test Receiver	Rohde & Schwarz	ESCS 30 /100388	2014-10-17	2015-10-16
Antenna (30-1000 MHz)	Schaffner	CBL6111C / 2791	2014-10-19	2016-10-18
Coaxial Cable	--	E167	2015-06-25	2016-06-24
Antenna Mast System	Schwarzbeck	AM9104 / -	--	--
Turntable with Controller	Drehtisch	DT312 / -	--	--

6 Test Results

6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement:	CFR 47 PART 15 SUBPART B, 2015
Test Method:	ANSI C63.4: 2014
Test Voltage & frequency:	120V AC, 60Hz
Test Date:	September 01, 2015
Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak and Average if maximised peak within 20dB of Quasi-Peak limit

Limit:

Frequency range MHz	Class B Limits dB (µV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note:

- 1) The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
- 2) The lower limit is applicable at the transition frequency.

6.1.1 EUT Operation

Operating Environment:

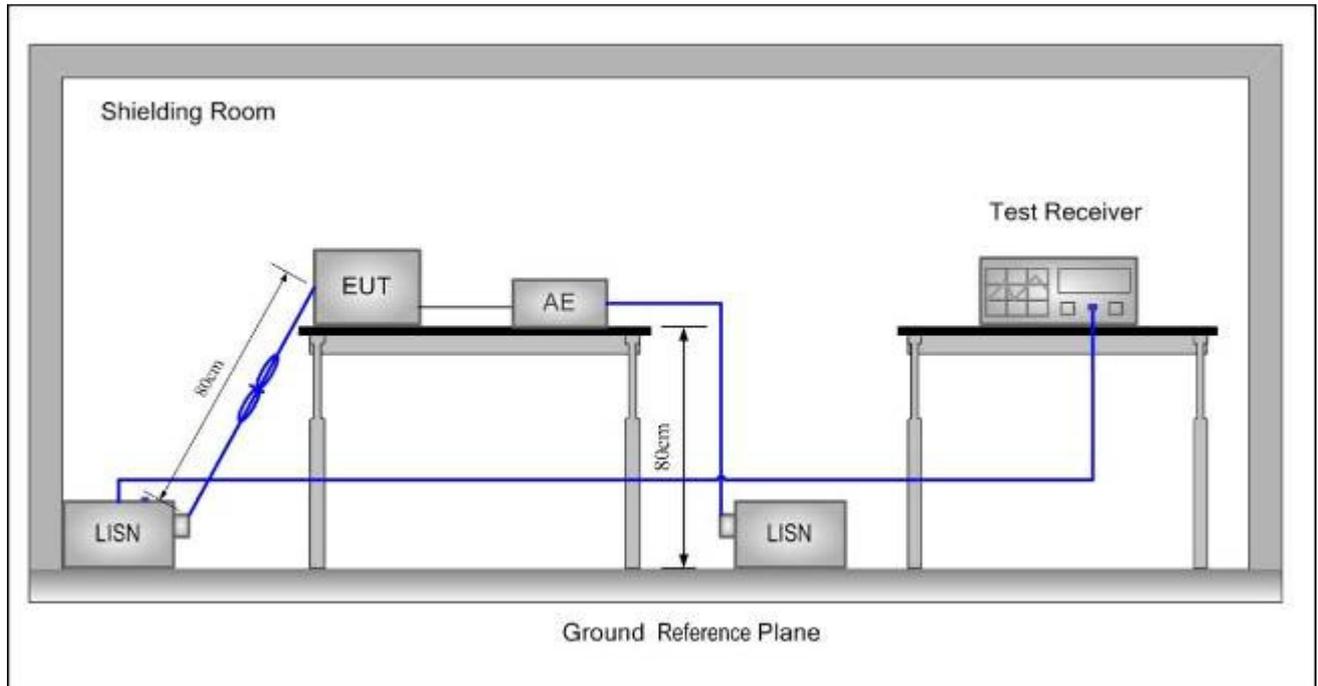
Temperature: 25°C Humidity: 47% Atmospheric Pressure: 1020mbar

Test Voltage: 120V AC Test frequency: 60Hz

EUT Operation: Pre-test with Peak detector with the following mode(s):
1: Running mode (Keep EUT running continual.)

Final test with Quasi-Peak detector with the following mode(s):
1: Running mode (Keep EUT running continual.)

6.1.2 Test Setup and Procedure



1. The mains terminal conducted emission test was conducted in a shielded room.
2. The EUT was connected via the host computer to AC power source through a LISN (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. For Load terminal voltage measurement, a voltage probe was used on the load terminals. Measurement at control terminals were carried out by means of an impedance stabilization network (ISN). The ISN was bounded to ground.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The EUT kept a distance of at least 0.8m from any other earthed conducting surface. The Artificial Mains Network was situated at a distance of 0.8m from the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

6.1.3 Measurement Data

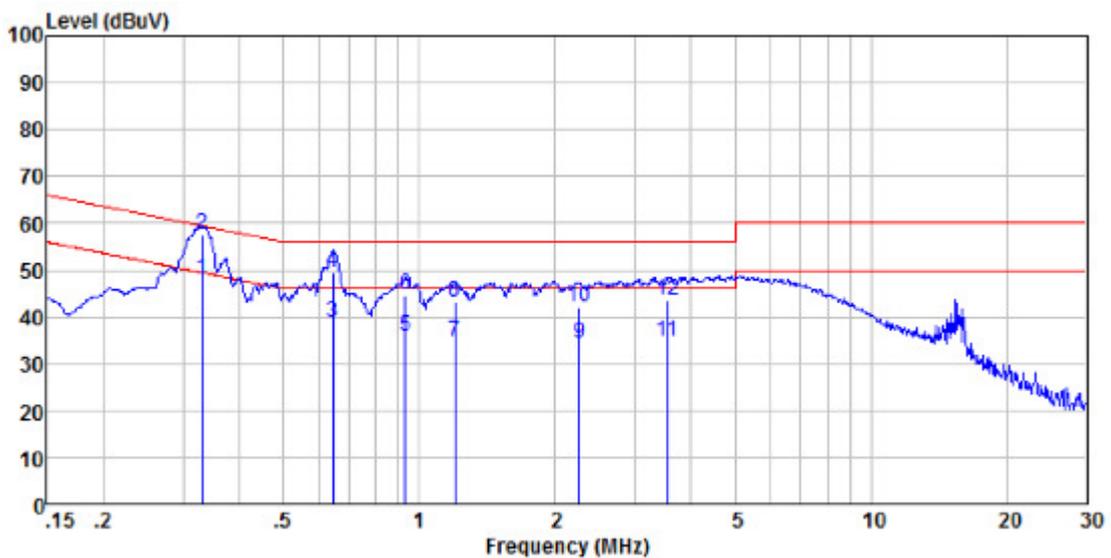
An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following Quasi-Peak and Average measurements were performed on Running mode:

Live line :

Peak Scan:



Quasi-peak and Average measurement:

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.330	0.00	0.01	48.02	48.03	49.44	-1.41	Average
2	0.330	0.00	0.01	57.69	57.70	59.44	-1.74	QP
3	0.644	0.00	0.15	38.42	38.57	46.00	-7.43	Average
4	0.644	0.00	0.15	49.26	49.41	56.00	-6.59	QP
5	0.933	0.00	0.15	35.76	35.91	46.00	-10.09	Average
6	0.933	0.00	0.15	44.59	44.74	56.00	-11.26	QP
7	1.197	0.00	0.16	34.60	34.76	46.00	-11.24	Average
8	1.197	0.00	0.16	43.17	43.33	56.00	-12.67	QP
9	2.261	0.00	0.20	34.12	34.32	46.00	-11.68	Average
10	2.261	0.00	0.20	41.72	41.92	56.00	-14.08	QP
11	3.547	0.00	0.25	34.49	34.74	46.00	-11.26	Average
12	3.547	0.00	0.25	43.24	43.49	56.00	-12.51	QP

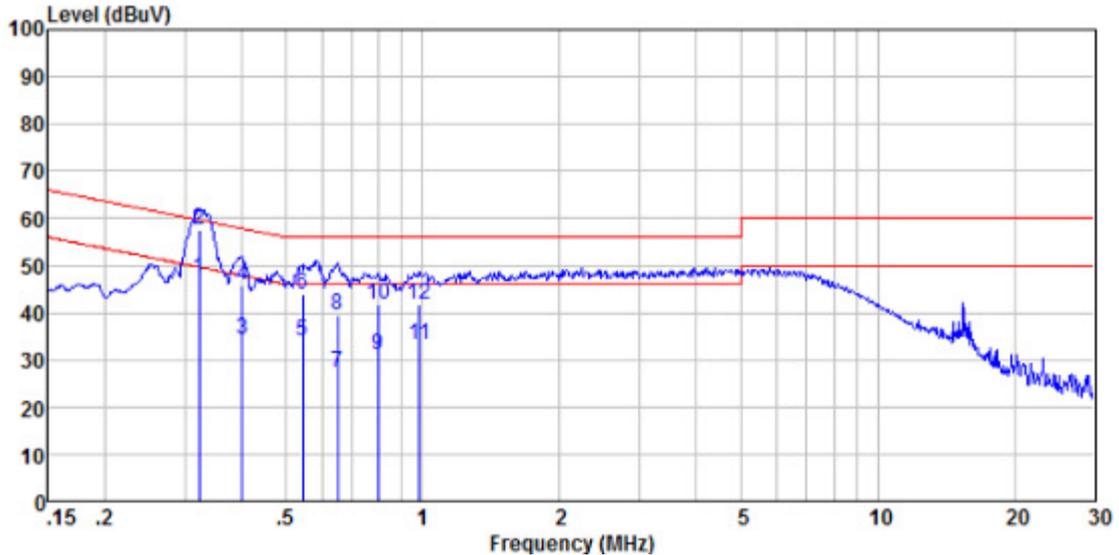
Level = Read Level + LISN Factor + Cable Loss.

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Neutral line :

Peak Scan:



Quasi-peak and Average measurement:

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.322	0.00	0.01	47.23	47.24	49.66	-2.42	Average
2	0.322	0.00	0.01	57.49	57.50	59.66	-2.16	QP
3	0.400	0.00	0.01	34.44	34.45	47.86	-13.41	Average
4	0.400	0.00	0.01	45.65	45.66	57.86	-12.20	QP
5	0.544	0.00	0.04	33.95	33.99	46.00	-12.01	Average
6	0.544	0.00	0.04	43.87	43.91	56.00	-12.09	QP
7	0.651	0.00	0.06	27.10	27.16	46.00	-18.84	Average
8	0.651	0.00	0.06	39.38	39.44	56.00	-16.56	QP
9	0.796	0.00	0.10	30.74	30.84	46.00	-15.16	Average
10	0.796	0.00	0.10	41.64	41.74	56.00	-14.26	QP
11	0.984	0.00	0.15	32.96	33.11	46.00	-12.89	Average
12	0.984	0.00	0.15	41.69	41.84	56.00	-14.16	QP

Level = Read Level + LISN Factor + Cable Loss.

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6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: CFR 47 PART 15 SUBPART B, 2015
 Test Method: ANSI C63.4: 2014
 Test Voltage & frequency: 120V AC, 60Hz
 Test Date: August 28, 2015
 Frequency Range: 30MHz to 1GHz
 Measurement Distance: 3m
 Detector: Peak for pre-scan (120kHz resolution bandwidth)
 Quasi-Peak if maximised peak within 20dB of limit
 Class: Class B

Frequency range MHz	Quasi-peak limits dB (µV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

Note: At transitional frequencies the lower limit applies.

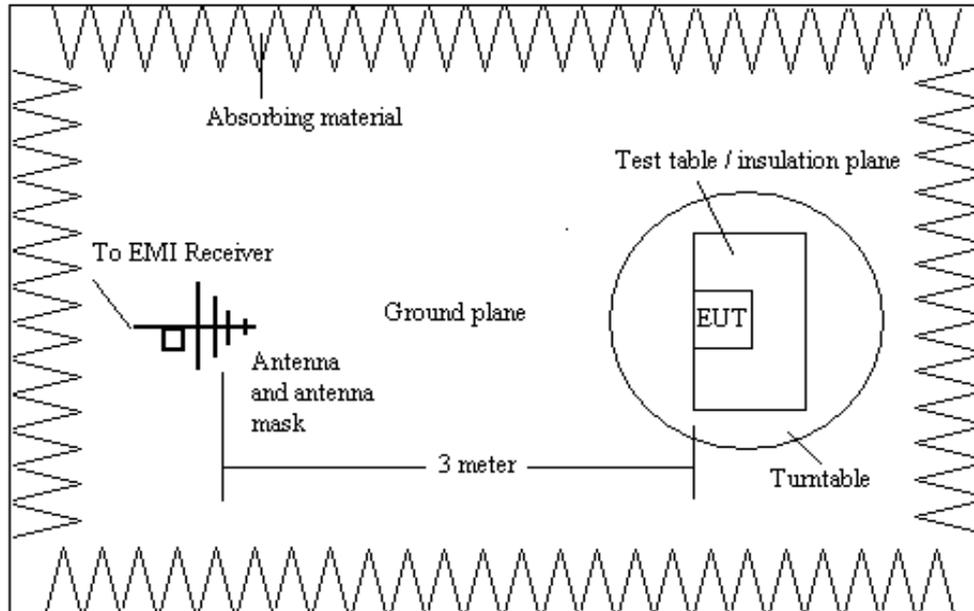
6.2.1 EUT Operation

Operating Environment:
 Temperature: 25°C Humidity: 47% Atmospheric Pressure: 1020mbar
 Test Voltage: 120V AC Test frequency: 60Hz

EUT Operation: Pre-test with Peak detector with the following mode(s):
 1: Running mode (Keep EUT running continual.)

Final test with Quasi-Peak detector with the following mode(s):
 1: Running mode (Keep EUT running continual.)

6.2.2 Test Setup and Procedure



1. The pre-test of the radiated emissions test was conducted in a semi-anechoic chamber and the final measurement was conducted in the open area test site.
2. Bilog antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to the host PC which was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT with located frequencies.
5. The actual frequencies of maximum emission were confirmed in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

6.2.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and frequencies of peak emissions from the EUT were detected within 20dB of the class B limit line. Final measurement was conducted in the open area test site with data as follows:

Test results on Running mode:

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Over Limit (dB)
30.00	V	12.50	16.31	28.81	40.00	-11.19
66.13	H	12.45	18.41	30.86	40.00	-9.14
66.20	V	12.44	21.73	34.17	40.00	-5.83
108.76	V	10.69	23.32	34.01	43.50	-9.49
135.82	V	12.13	25.15	37.28	43.50	-6.22
143.27	H	12.46	23.82	36.28	43.50	-7.22
147.62	V	12.68	21.11	33.79	43.50	-9.71
162.96	H	12.13	22.75	34.88	43.50	-8.62
190.20	V	11.09	25.01	36.10	43.50	-7.40
190.61	H	11.08	24.06	35.14	43.50	-8.36
325.86	H	13.12	24.29	37.41	46.00	-8.59
817.07	H	23.67	13.24	36.91	46.00	-9.09

Note:

- 1) All readings are Quasi-Peak values.
- 2) Transducer = Antenna Factor + Cable Loss.

6.3 Radiated Emissions above 1 GHz

Test Requirement: CFR 47 PART 15 SUBPART B, 2015
Test Method: ANSI C63.4: 2014
Test Date: Not Applicable

Remark:

There is no need for Radiated Emissions (above 1G) test to be performed on this product in accordance with FCC Part 15 because the highest internal source is less than 108 MHz.

For further details, please refer to Subject B section 15.33 (b) (1)of FCC Part 15 which states:

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

7 Photographs

7.1 Conducted Emission Test Setup



7.2 Radiated Emission Test Setup



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7.3 EUT Constructional Details



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